

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/19870

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : Please See Extra Sheet.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CAS ONLINE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,545,647 A (TANAKA et al.) 13 August 1996, column 1, lines 36-45.	1-4
X	US 4,308,278 A (SCHNEIDER et al.) 29 December 1981, see Examples 1, 2 and 3.	1-4
X	US 5,340,827 A (BEELEY et al.) 23 August 1994, see column 2, Formula (1) and see column 5, lines 6-7.	1-4
Y		1-4
Y	WO 95/01338 A1 (FLOCKERZI et al.) 12 January 1995, see the abstract and Formula (I).	1-4
Y	US 5,196,426 A (SACCOMANO et al.) 23 March 1993, see columns 3-4, Formula (I).	1-4
Y	US 5,426,107 A (BELL et al.) 20 June 1995, see column 1, Formula	1-4

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*B* earlier document published on or after the international filing date	*Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G*	document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means		
*P* document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

03 FEBRUARY 1998

Date of mailing of the international search report

10 MAR 1998

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231  
Facsimile No. (703) 305-3230

Authorized officer

DEEPAK RAO

Telephone No. (703) 308-1235

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,491,147 A (BOYD et al.) 13 February 1996, see entire document.	1-7
A	US 5,254,575 A (PICK et al.) 19 October 1993, see entire document.	1-7
A	US 5,223,504 A (NOVEROLA et al.) 29 June 1993, see entire document.	1-7

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## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-7 (in part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

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## A. CLASSIFICATION OF SUBJECT MATTER:

IPC (6):

A61K 31/165, 31/38, 31/40, 31/415, 31/425, 31/44, 31/47, 31/50, 31/505; C07D 207/24, 207/46, 211/72, 211/84, 213/72, 213/75, 213/81, 213/83, 233/28, 233/30, 233/32, 233/38, 277/22, 279/04, 279/06, 295/00, 401/00, 417/00, 487/00

## A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

514/227.2, 247, 255, 258, 352, 365, 398, 424, 425, 617; 544/54, 55, 238, 239, 262, 363; 546/305, 309; 548/203, 316.4, 323.5, 530, 531, 543, 550, 551; 564/182

## B. FIELDS SEARCHED

Minimum documentation searched

Classification System: U.S.

514/227.2, 247, 255, 258, 352, 365, 398, 424, 425, 617; 544/54, 55, 238, 239, 262, 363; 546/305, 309; 548/203, 316.4, 323.5, 530, 531, 543, 550, 551; 564/182

## BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1.

Group I. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula I.

Group II. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula II.

Group III. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula III.

Group IV. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula IV.

Group V. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula V.

Group VI. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula VI.

Group VII. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula VII.

Group VIII. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula VIII.

Group IX. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula IX.

Group X. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula X.

Group XI. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula XI.

Group XII. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula XII.

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Group XIII. Claim(s) 1-7 (in part), drawn to compound, composition and method of use wherein the compound is of the structural formula XIII.

Group XIV. Claim(s) 1-2 (in part) and 4-7 (in part), drawn to compound, composition and method of use wherein the compound NON-PDE is not provided for by any of the above groups 1-12.

The inventions listed as Groups 1-13 do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Compounds, compositions and method of treating that are of the same scope are considered to form a single inventive concept as required by PCT Rule 13.1, 37 CFR 1.475(d). The groups outlined above are not so linked as to form a single inventive concept as they are either drawn to dissimilar compounds of varying cores and functional moieties which are not art recognized equivalents.